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## NOTES ON A COLLECTION OF PLANTS FROM THE HOPI INDIAN REGION OF ARIZONA MADE BY J.G. OWENS IN 1891

BY  
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RECENTLY, in the Botanical Museum of Harvard University, I came upon a collection of plants made by the Hemenway Expedition in Arizona. There is no indication as to who made the collection or who identified the plants. Exact locations are not mentioned, but Indian names are given as well as the use of the plants.

Upon inquiring at the Peabody Museum<sup>1</sup>, it was ascertained that the Indian names are Hopi and that there were several expeditions bearing the name "Hemenway Expedition." For the most part the collections of the Hemenway Expeditions were ethnological and archeological in nature. The principal expeditions financed by Mrs. Mary Hemenway, of which there is material in the Peabody Museum, were made in 1887 and 1888.

In "The Hopi Journal of Alexander M. Stephen," edited by Elsie Clews Parsons (4), it is recorded that "when J. Walter Fewkes began to study the Hopi as director of the Hemenway expedition, in 1890, he en-

<sup>1</sup>I wish to express my sincere thanks to Mr. Donald Scott, Director, Mr. J. O. Brew and Associate Professor Clyde Kluckhohn of the Peabody Museum of Harvard University for their aid in determining the Indian tribe, obtaining information about the Hemenway Expedition and in suggesting early literature relating to Hopi ethnobotany.

listed Stephen's coöperation." Fewkes, in "A Contribution to Ethnobotany" (1), makes the statement that parts of his material "were collected while at work for the Hemenway expedition and portions as special ethnologist of the Smithsonian Institution." Furthermore, he states that his specimens were identified "by the late Dr. Sereno Watson, of Harvard University, and have been deposited in the herbarium of that institution." He also refers to an accumulation of material on the foods and food reserves of the Hopi Indians, begun in 1891 by a student, "the late J. G. Owens," upon which he has a memoir in preparation. This article he states as being "more or less preliminary in nature."

Later, in the summers of 1896 and 1897, Walter Hough spent some time in the Hopi region in company with Dr. J. Walter Fewkes, making a study of the ethnobotany of the Hopi Indians. The specimens of plants collected, according to the reports of Hough (2), (3), are to be found in the United States National Museum.

There are a few bits of newspapers that were found in the collection of plants under consideration. These newspapers were apparently used as driers because they have written on them a field number and the Indian name of the plant. They bear the name and the date of the "Boston Weekly Post," Friday, May 22, 1891, and the "Philadelphia Press," Saturday, May 23, 1891. There is also a strip from some New York paper with the date May 23, 1891. It seems reasonable to infer, therefore, that the collection was made during the summer of 1891 or later. During the summer of 1891, Fewkes, Owens and Stephen, according to the written reports, were working in the Hopi area.

In checking this collection of plants with specimens in the Gray Herbarium of Harvard University, a number of specimens collected by J. G. Owens in 1891 were

found. However, these plants in the Gray Herbarium did not give the Indian names nor the uses, although some of the species were identical with those in the collection under consideration. Later, in comparing certain loose specimens in this collection with the mounted specimens in the Gray Herbarium, labels with the following information were found:

Indian Food Plants

Hemenway Expedition to Hopi Country,

N. E. Arizona, 1891.

Coll. John G. Owens

In addition to the above typewritten label, there is a small handwritten label which in writing and wording appears to be exactly like the label found with the loose material in the collection of plants under consideration. A further comparison of the labels on certain specimens in the Gray Herbarium indicates that the writing on these labels is similar to, if not identical with, that on all the labels for the collection here treated. There seems to be little doubt that the collection now under discussion is part of the J. G. Owens collection of Hopi foods and food reserves made in 1891 which is referred to by Fewkes and upon which he was preparing a memoir.

In comparing the collection in hand with the published report of Fewkes (1), it was found that many of these species were reported by him. However, of the forty-four plant specimens in this collection which are reported by Fewkes, thirty-one of them have a use which is slightly or entirely different from that given by him. It was also discovered that in this group of plants all but six of the Hopi names recorded for them were slightly different in spelling from those recorded by Fewkes. These differences in use and the variations in the Hopi names suggest that all of the present collection was not used by Fewkes in the preparation of his article.

A similar comparison was made with the published material of Hough (2), (3). In this case there were thirty-three plants mentioned by Hough which are in the collection under discussion. Seventeen of these have a different use. Only six plants appear in this collection which are mentioned in Stephen's Journal (4). There is only one with a different recorded use.

There is now available an excellent and unusually complete "Ethnobotany of the Hopi" by Whiting (5), which may be very useful in comparing the present with the past uses of the same plants by members of this tribe. When the collection under discussion was subjected to this comparison, it was found that for the most part the uses agree. There are only four discrepancies. It was found that *Coriandrum sativum* L. (introduced), *Castilleja linariaefolia* Benth. and *Artemisia frigida* Willd. were formerly used as food or food adjuncts, and *Suaeda fruticosa* (L.) Forskal was formerly applied in a different manner as a medicine. This would seem to be indicative of a relatively stable knowledge of plant use over the past fifty years. However, the collection under discussion contains fifteen plant species not mentioned by Whiting, twelve of which were used as food and three as medicine. Does this mean that acculturation factors as well as a decreasing dependence upon agriculture have brought about an abandonment of certain natural resources previously exploited? It would seem that this may be true. However, this transformation may have been caused in part by a modified flora resulting from overgrazing and soil erosion. In addition to the facts just noted, the collection under consideration contains information concerning plants which were not found by Whiting, but which were referred to by the earlier workers.

Because of the difference in the recorded uses of the plants collected by Owens from the uses of the same

plants which have been published by other workers (1), (2), (3), (4), (5), the writer presents the information embodied in the collection as a record of one of the early collections of plants from the Hopi region. The information not only broadens our knowledge of the uses of the plants by the Hopi in the 1890's, but it also gives more comparative material for present and future workers interested in the ethnology and ethnobotany of these Indians.

The Owens collection of plants under discussion in this paper is now deposited in the Herbarium of Economic Botany, Botanical Museum, Harvard University. The material has been re-identified and the present accepted names used. The enumeration of the material has been arranged in systematic order and wherever possible a common name has been given. In all cases, the authority for the botanical names is cited in full. In instances of double citation, the name-bringing synonym has been given. Synonymy is used where there has been a nomenclatorial change. When the original determination of a plant has been found in error, the original identifications are given in parenthesis. The Hopi names and the uses made of the plants are those of the original collector, J.G. Owens, and are taken directly from the herbarium sheets.

## PINACEAE

(Pine Family)

***Juniperus utahensis*** (*Engelmann*) *Lemmon* in Calif. Board Forest. Rept. 3 (1890) 183.

*Juniperus californica* Carrière var. *utahensis* Engelmann in Trans. Acad. St. Louis 3 (1877) 588.

Utah Juniper.

(Originally identified as *Juniperus occidentalis*).

Hoi-háq-bi.

“Boil branches and drink the tea. Used especially by women during confinement.”

GRAMINEAE  
(Grass Family)

**Leptoloma cognatum** (*Schultes*) *Chase* in *Proc. Biol. Soc. Wash.* 19 (1906) 192.

*Panicum cognatum* *Schultes* in *Roemer & Schultes Syst. Veg. Mant.* 2 (1824) 235.

*Panicum autumnale* *Bosc ex Sprengel Syst. Veg.* 1 (1825) 320.

Fall Witchgrass.

Bá-du-sha-ka.

“Grind seed into meal.”

**Muhlenbergia pungens** *Thurber* in *Asa Gray in Proc. Acad. Nat. Sci. Phila.* 1863 (1863) 78.

Purple Hairgrass.

Wúrg-si.

“Used to make brooms.”

**Muhlenbergia rigens** (*Bentham*) *Hitchcock* in *Journ. Wash. Acad. Sci.* 23 (1933) 453.

*Epicampes rigens* *Bentham* in *Journ. Linn. Soc. Bot.* 19 (1881) 88.

Deergrass.

Kúath-kui.

“Grind seed and make bread of meal.”

**Oryzopsis hymenoides** (*Roemer and Schultes*) *Ricker ex Piper* in *Contrib. U.S. Nat. Herb.* 11 (1906) 109.

*Stipa hymenoides* *Roemer and Schultes Syst. Veg.* 2 (1817) 339.

*Oryzopsis cuspidata* *Bentham ex Vasey* in *U.S. Dept. Agric. Spec. Rept.* 63 (1883) 23.

Sand Bunchgrass, Indian Ricegrass, Indian Millet.  
Lé-huh.

“Grind the seed and make a meal of it.”

**Panicum capillare** *Linnaeus* Sp. Pl. 1 (1753) 58.

Witchgrass.

Né-ni.

“Grind seed and make bread of meal.”

## CYPERACEAE

(Sedge Family)

**Scirpus validus** *Vahl* Enum. Pl. 2 (1806) 268.

*Scirpus lacustris* auth. Amer., non *Linnaeus*.

Great Bulrush.

Ma-múz-ri.

“Eat raw the lower end of the stalk.”

## LILIACEAE

(Lily Family)

**Allium vineale** *Linnaeus* Sp. Pl. 1 (1753) 299.

Field Garlic (introduced from Europe).

Á-so-si.

“Use the bulb.”

**Calochortus aureus** *S. Watson* in Amer. Nat. 7  
(1873) 303.

Mariposa Lily.

He-e-si.

“Eat flowers, also the bulb.”

## POLYGONACEAE

(Buckwheat Family)

**Eriogonum corymbosum** *Bentham* in deCandolle  
Prodr. 14 (1856) 17.

Bo-wá-wi.

“Boil and press the stalks into cakes. When these dry they eat them with salt.”

**Eriogonum Hookeri** *S. Watson* in *Proc. Amer. Acad.* 14 (1879) 295.

Kál-naq-a-buq.

“Boil with mush for its flavor.”

## CHENOPODIACEAE

(Goosefoot Family)

**Atriplex argentea** *Nuttall* *Gen. Pl.* 1 (1818) 198.

Saltbush.

Ung-át-ki.

“Boil with meat.”

**Atriplex canescens** (*Pursh*) *Nuttall* *Gen. Pl.* 1 (1818) 197.

*Calligonum canescens* *Pursh* *Fl. Amer. Sept.* (1814) 370.

Fourwing Saltbush, Shadscale.

Shu-bi.

“Ashes used instead of baking soda.”

**Atriplex confertifolia** (*Torrey*) *S. Watson* in *Proc. Amer. Acad.* 9 (1874) 119.

*Obione confertifolia* *Torrey* in *Fremont Rept. Exped. Rocky Mount.* (1845) 318.

Shadscale.

Ho-i-á-vi-ko.

“Boil with meat.”

**Chenopodium album** *Linnaeus* *Sp. Pl.* 1 (1753) 219.



Lamb's-quarters (introduced from Europe, now widely distributed).

Shís-wa.

“Grind the seed and make a mush.”

**Chenopodium Fremontii** *S. Watson* in King Rept. Geol. Explor. 40th Par. 5 (Bot.) (1871) 287.

Wi-bá-tub-huh.

“Grind the seed and make a mush of it.”

**Chenopodium leptophyllum** *Nuttall ex Watson* in Proc. Amer. Acad. 9 (1874) 94.

Cha-chá-tub-huh.

“Grind the seed and make a mush of it.”

**Cycloloma atriplicifolium** (*Sprengel*) *Coulter* in Mem. Torr. Bot. Club 5 (1894) 143.

*Salsola atriplicifolia* *Sprengel* Bot. Gart. Hal. Nachtr. 1 (1801) 35.

Tumble Weed.

(Originally determined as *Chenopodium cornutum*).

Ko-tók-i.

“Make a mush of the ground seed.”

**Suaeda fruticosa** (*Linneaus*) *Forskal* Fl. Aegypt.-Arab. (1775) 70.

*Chenopodium fruticosum* *Linnaeus* Sp. Pl. 1 (1753) 221.

*Suaeda intermedia* *S. Watson* in Proc. Amer. Acad. 14 (1879) 296.

Seepweed.

Chi-ích-de-bi.

“Put the dried leaves on sore places.”

**Monolepis Nuttalliana** (*Schultes*) *Greene* Fl. Francisc. (1891) 168.

*Blitum Nuttallianum* Schultes in Roemer & Schultes  
Syst. Veg. Mant. 1 (1822) 65.

*Monolepis chenopodioides* Moquin-Tandon in de  
Candolle Prodr. 13, pt. 2 (1849) 85.

Hu-rú-tub-huh.

“Grind seed and make it into a mush.”

**Sarcobatus vermiculatus** (*Hooker*) *Torrey* in  
Emory Milit. Recon. (1848) 149.

*Batis* (?) *vermiculata* Hooker Fl. Bor.-Amer. 2  
(1838) 128.

Greasewood.

Dé-bi.

“Make their planting-sticks and poorer boomerangs  
of this.”

## AMARANTACEAE

(Amaranth Family)

**Amaranthus blitoides** *S. Watson* in Proc. Amer.  
Acad. 12 (1877) 273.

Prostrate Amaranth, Spreading Pigweed.

Bó-ci-û.

“Make a mush from the ground seed.”

**Amaranthus cruentus** *Linnaeus* Syst. Nat. Veg.  
ed. 10, 2 (1759) 1269.

*Amaranthus paniculatus* *Linnaeus* Sp. Pl. ed. 2 (1763)  
1406.

Cockscomb (native to Asia).

Ko-mo.

“Flowers used to color bread red for certain dances.”

**Amaranthus Torreyi** (*A. Gray*) *Bentham* in *S.*  
*Watson* Bot. Calif. 2 (1880) 42.

*Amblogyne Torreyi* A. Gray in Proc. Amer. Acad.  
5 (1861) 167.

Wí-wa.

“Boil with meat.”

CRUCIFERAE  
(Mustard Family)

**Dithyrea Wislizenii** *Engelmann* in Wislizenius  
Mem. Tour North. Mex. (1848) 96.

*Biscutella Wislizeni* Brewer and Watson Bot. Calif.  
1 (1878) 48.

Spectacle-pod.

Kō-chíb-si.

“Ground stalk used as a salve for all kinds of sores.”

**Stanleya albescens** *M. E. Jones* in *Zoe* 2 (1891) 17.

Ís-heh.

“Boil and eat.”

SAXIFRAGACEAE  
(Saxifrage Family)

**Ribes cereum** *Douglas* in Trans. Hort. Soc. Lond.  
7 (1830) 512.

Wax Currant.

En-wíb-si.

“Used for pains in the stomach.”

LEGUMINOSAE  
(Legume, Pulse or Pea Family)

**Dalea lanata** *Sprengel* Syst. Veg. 3 (1826) 327.

Koí-shung-û.

“Eat the root. Regard it as sugar.”

## LOASACEAE

(Loasa Family)

**Mentzelia albicaulis** *Douglas ex Hooker* Fl. Bor.-  
Amer. 1 (1834) 222.

Sál-li.

“Mash seeds and roll into sticks and eat.”

## UMBELLIFERAE

(Parsley Family)

**Coriandrum sativum** *Linnaeus* Sp. Pl. 1 (1753)  
256.

Coriander (introduced from southern Europe).

Ku-rán-to.

“Dip in water, eat raw and green.”

**Foeniculum vulgare** *Miller* Gard. Dict. ed. 8  
(1768) Foeniculum no. 1.

Fennel (introduced from Europe).

Kuang-ná-pi-ba.

(Use not given).

## ASCLEPIADACEAE

(Milkweed Family)

**Asclepias galioides** *Humboldt, Bonpland & Kunth*  
Nov. Gen. & Sp. 3 (1818) 188.

(Originally determined as *Asclepias verticillata*).

Bi-íng-uh.

“Used by the mother to produce a flow of milk.”

**Asclepias speciosa** *Torrey* in Ann. Lyc. N. Y. 2  
(1827) 218.

Sú-yuh.

“Boil with meat.”

BORAGINACEAE

(Borage Family)

**Lithospermum linearifolium** *Goldie* in *Edinburgh Phil. Journ.* 6 (1822) 322.

*Lithospermum angustifolium* Michaux *Fl. Bor.-Amer.* 1 (1803) 130, non Forskal.

Puccoon, Gromwell.

Pa-láng-û.

“A medicinal plant.”

LABIATAE

(Mint Family)

**Marrubium vulgare** *Linnaeus* *Sp. Pl.* 1 (1753) 583.

Horehound. (introduced from Eurasia).

Pi-lé-ta-ka.

“Medicinal plant.”

**Mentha canadensis** *Linnaeus* *Sp. Pl.* 1 (1753) 577.

Common Wild Mint.

Ba-ma-uhg-a-to-sha-bi.

“Boil with mush for its flavor.”

**Monarda pectinata** *Nuttall* in *Journ. Acad. Phila.* n.s. 1 (1848) 182.

Lemon Monarda, Lemon Mint.

Kā-bīb-si.

(No use given).

**Poliomintha incana** (*Torrey*) *A. Gray* in *Proc. Amer. Acad.* 8 (1870) 296.

*Hedeoma incana* Torrey in *Emory Rept. U. S. & Mex. Bound. Surv. (Bot.)* (1859) 130.

Me-úng-a-to-sha-bi.

“Eat flowers and also boil with certain mush to give it a flavor.”

SOLANACEAE  
(Nightshade Family)

**Lycium pallidum** *Miers* in *Ann. & Mag. Nat. Hist.* ser. 2, 14 (1854) 131 and *Illustr. So. Amer. Pl.* 2 (1857) 108.

Ke-béb-si.

“Eat the seeds.”

**Nicotiana attenuata** *Torrey ex S. Watson* in *King Rept. Geol. Explor.* 40th Par. 5 (Bot.) (1871) 276.

Hopi Tobacco.

Pí-bû.

“Very much used.”

**Solanum Jamesii** *Torrey* in *Ann. Lyc. N. Y.* 2 (1827) 227.

Wild Potato.

Dúm-na

“Small potatoes used principally to make yeast.”

SCROPHULARIACEAE  
(Figwort Family)

**Castilleja linariaefolia** *Benth* in *deCandolle Prodr.* 10 (1846) 532.

Painted-cup.

Wi-bám-an-si.

“Eat the flowers.”

COMPOSITAE  
(Thistle Family)

**Artemisia dracunculoides** *Pursh* Fl. Amer. Sept. (1814) 742.

Shép-eh.

(No use given).

**Artemisia frigida** *Willdenow* Sp. Pl. 3 (1804) 1838. Mountain Sagerbrush, Estafiata.

Kúr-ug-yû.

“Put on prayer sticks, also a little put in with sweet corn when they roast it.”

**Carthamus tinctorius** *Linnaeus* Sp. Pl. 1 (1753) 830.

Safflower (introduced from Eurasia).

A-sóp-i-ron.

“Flowers used to color bread yellow for certain dances.”

**Chrysothamnus Howardii** (*Parry ex A. Gray*) *Greene* in *Erythea* 3 (1895) 113.

*Linosyris Howardi* *Parry ex A. Gray* in *Proc. Amer. Acad.* 6 (1865) 541.

*Bigelovia Howardii* *A. Gray* in *Proc. Amer. Acad.* 8 (1873) 641.

Rabbit Bush.

Si-wáq-bi.

“Stick in rows in the sand to act as a sandbreak.”

**Chrysothamnus stenophyllus** (*A. Gray*) *Greene* in *Erythea* 3 (1895) 94.

*Bigelovia Douglasii* *A. Gray* var. *stenophylla* *A. Gray* in *Proc. Amer. Acad.* 8 (1873) 646.

Rabbit Bush.

Má-i-bi.

“Used as a sand-break to protect young corn and melons.”

**Gutierrezia sarothrae** (*Pursh*) *Britton & Rusby*  
in *Trans. N. Y. Acad.* 7 (1887) 10.

*Solidago sarothrae* Pursh *Fl. Amer. Sept.* (1814) 540.

*Gutierrezia euthamiae* Torrey & Gray *Fl. No. Amer.*  
2 (1842) 193.

Snakeweed.

Bam-na-vi.

“Tied on to the prayer stick.”

**Lygodesmia grandiflora** (*Nuttall*) *Torrey & Gray*  
*Fl. No. Amer.* 2 (1843) 485.

*Erythremia grandiflora* Nuttall in *Trans. Amer. Phil. Soc. n.s.* 7 (1841) 445.

Mi-hah.

“Boil with a certain kind of mush for flavor.”

**Thelesperma gracile** (*Torrey*) *A. Gray* in *Hooker Journ. Bot. and Kew Gard. Misc.* 1 (1849) 252.

*Bidens gracilis* Torrey in *Ann. Lyc. N. Y.* 2 (1828) 215.

Hō-hó-i-si.

“Called coffee, and so used by the Hopi Indians.”

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